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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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DKW LAW GROUP, P.C. 58TH FLOOR - USX TOWER 600 GRANT STREET PITTSBURGH, PA 15219			SWEARINGEN, JEFFREY R	
			ART UNIT	PAPER NUMBER
			2143	

DATE MAILED: 09/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,847

Applicant(s)

PERRIN ET AL.

Examiner

Jeffrey R. Swearingen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☒ Claim(s) 3,8,11,23,25 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claims 1-42 have been examined.

Claim Objections

Claims 3, 8, 11, 23, 25 and 30 are objected to because of the following informalities:

Claim 3 recites the limitation "said E²PROM memory chip" in line 1 of the claim.

There is insufficient antecedent basis for this limitation in the claim. For purposes of this office action claim 3 is treated as being dependent upon claim 2.

Pertaining to claim 8, "whrein" is misspelled.

Pertaining to claim 11, "easch" is misspelled.

Pertaining to claim 23, Examiner believes line 3 should state "on and in" instead of "on an in" and that a comma should be placed in line 5 at "...said single board computer, and a PCI..." for further clarity.

Pertaining to claim 25, the claim is dependent upon itself, and therefore improper. For purposes of this office action, claim 25 is treated as being dependent upon claim 24.

Pertaining to claim 30, the claim includes the phrase "and and".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12, 16 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12 and 16 refer to a router that is approximately one rack unit in height.

The term "approximately" in claims 12 and 16 is a relative term which renders the claim indefinite. The term "approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. No definition exists as to the metes and bounds of what is considered "approximately one rack unit in height".

Claim 23 contains the trademark/trade name PCI Industrial Computer Manufacturing Group PIC MG. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the

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trademark/trade name is used to identify/describe a connector and, accordingly, the identification/description is indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

~~(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.~~

~~(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.~~

~~(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.~~

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al. (U.S. Patent No. 5,922,059).

Pertaining to claim 1, Lin discloses a backplane board substrate having a plurality of electrical circuitry pathways [column 2, line 34], a plurality of electronic circuit board expansion slots located on said substrate and in data communication with said electrical pathways [Figure 3, items 24], each slot adapted to receive a network interface card [column 3, line 41] and retain said network interface card spaced apart from but in a generally parallel plane with said backplane board substrate [Figure 4]; at least one electronic circuit board expansion slot adapted to receive a single board

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computer [Figure 3, item 22]; wherein said backplane board is a passive backplane board [column 2, line 34]. Lin teaches an implementation which utilizes a network interface [column 3, line 41, the office considers this as synonymous with having a network interface card installed].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2, 5-13, 16-17, 23-24, 27-35, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin as applied to claim 1 above, and further in view of Cisco 3600 Series Hardware Installation Guide (published in 1999).

Pertaining to claim 2, Lin discloses a backplane board for use in a router. Lin fails to disclose the use of an E²PROM.

The Cisco 3600 Series Hardware Installation Guide does not explicitly disclose that a router can have an Electrically Erasable PROM (EEPROM or E²PROM). However, it does disclose that a router can have an EPROM-based memory.

Motivation exists to have an EEPROM instead of an EPROM because an EEPROM can be reprogrammed by just using a computer whereas an EPROM has to be erased by UV radiation.

It would have been obvious to one of ordinary skill in the networking art at the time of the invention to use an EEPROM with a backplane board in a router.

Pertaining to claim 5, Lin teaches a backplane board for use in a router. Lin fails to disclose the use of LEDs on the backplane. However, the Cisco 3600 Series Hardware Installation Guide discloses that such a router contains LEDs [Troubleshooting, Appendix A, Table A-4]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to incorporate LEDs as described by the Cisco 3600 Guide into the backplane described by Lin to display the status of the backplane.

Pertaining to claim 6, Lin and the Cisco 3600 Series Hardware Installation Guide disclose a backplane for use in a router with LEDs. The Cisco 3600 Guide further discloses LEDs that blink to indicate the diagnosis of the operational state of the backplane [Troubleshooting, Appendix A, Table A-1]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to use LEDs to display the operational status of the backplane as described by the Cisco 3600 Guide with the backplane described by Lin.

Pertaining to claim 7, Lin and the Cisco 3600 Guide disclose a backplane for use in a router with LEDs that display the operational state of the backplane. The Cisco 3600 Guide further discloses LEDs that blink to indicate network activity and data activity [Troubleshooting, Appendix A, Table A-4] [The office interprets this as indicating network utilization rate and displaying high availability heartbeats] It would have been obvious to one of ordinary skill in the networking art at the time of the invention to use

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LEDs to display network activity as described by the Cisco 3600 Guide on the backplane described by Lin.

Pertaining to claim 8, Lin and the Cisco 3600 Guide previously disclosed a backplane for a router with an EEPROM as applied to claim 2. The Cisco 3600 Series Hardware Installation Guide further discloses that such a router contains LEDs [Troubleshooting, Appendix A, Table A-4]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to incorporate LEDs as described by the Cisco 3600 Guide into the backplane described by Lin to display the status of the backplane.

Pertaining to claim 9, Lin and the Cisco 3600 Guide previously disclosed a backplane for a router with an EEPROM and LEDs as applied to claim 8. The Cisco 3600 Guide further discloses LEDs that blink to indicate the diagnosis of the operational state of the backplane [Troubleshooting, Appendix A, Table A-1]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to use LEDs to display the operational status of the backplane as described by the Cisco 3600 Guide with the backplane described by Lin.

Pertaining to claim 10, Lin and the Cisco 3600 Guide previously disclosed a backplane for a router with an EEPROM and LEDs that display system status as applied to claim 9. The Cisco 3600 Guide further discloses LEDs that blink to indicate network activity and data activity [Troubleshooting, Appendix A, Table A-4] [The office interprets this as indicating network utilization rate and displaying high availability heartbeats]. It would have been obvious to one of ordinary skill in the networking art at

the time of the invention to use LEDs to display network activity as described by the Cisco 3600 Guide on the backplane described by Lin.

Pertaining to claim 11, Lin discloses a backplane board for use in a router with expansion slots for network modules. Lin fails to disclose that the backplane board includes three electronic circuit board expansion slots. However, the Cisco 3600 Guide discloses that a router can have three or more slots for network modules [expansion slots for network interface cards][Chapter 1, page 1-6]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to have three expansion slots for network modules as taught by the Cisco 3600 Guide installed on the backplane for a router taught by Lin to allow for expansion of the backplane.

Pertaining to claim 12, Lin discloses a backplane board for use in a router. Lin fails to disclose that a router should be approximately one rack unit. However, the Cisco 3600 Guide discloses that a router can be one rack unit in height [Chapter 1, page 1-9, table 1-4]. Examiner interprets that if something is one rack unit in height, then it is approximately one rack unit in height. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to take a router one rack unit in size as shown in the Cisco 3600 Guide and combine it with the backplane for a router as taught in Lin to save space when combining a backplane and a router.

Pertaining to claim 13, Lin discloses a backplane board for use in a router. Lin fails to disclose that a router should be one rack unit in height. However, the Cisco 3600 Guide discloses that a router can be one rack unit in height [Chapter 1, page 1-9, table 1-4]. It would have been obvious to one of ordinary skill in the networking art at

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the time of the invention to take a router one rack unit in size as shown in the Cisco 3600 Guide and combine it with the backplane for a router as taught in Lin to save space when combining a backplane and a router.

Pertaining to claim 16, Lin discloses a backplane for a router with a single board computer, network interface-card receiving electronic circuit board expansion slots located on said backplane board, and network interface cards being retained in a parallel plane with the backplane. Lin fails to disclose a router with a housing and data communication ports accessible externally and approximately one rack unit in height.

However, the Cisco 3600 Guide discloses a router that contains a plurality of data communications ports accessible externally of said housing [Chapter 1, page 1-4, Figure 1-4]. The Cisco 3600 Guide also shows that a router housing can be one rack unit in height [Chapter 1, page 1-9, table 1-4]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to combine the housing and external data communication ports taught by the Cisco 3600 Guide with the backplane taught by Lin to allow protection of the backplane/single board computer and to allow easy external access to the network interface for users. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to put the backplane in a router housing one unit in height to save space.

Pertaining to claim 17, Lin and the Cisco 3600 Guide disclose a backplane used in a router. Lin further discloses a plurality of network interface card-receiving electronic circuit board expansion slots present on the backplane [Figure 3, items 24 and column 3, line 41]. It would have been obvious to one of ordinary skill in the networking art at

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the time of the invention to have a router as taught in the Cisco 3600 Guide combined with a backplane with network interface card expansion slots as disclosed by Lin to allow expansion of the router.

Pertaining to claim 23, Lin and the Cisco 3600 Guide disclose a backplane used in a router with a single board computer and a means for communicating between the backplane and the single board computer. The Cisco 3600 Guide fails to disclose means of data communication selected from the group consisting of an electronic circuit board expansion slot located on and in data communication with said backplane board, and a PCI MG connector. Lin further discloses a connector in communication with a single board computer [column 2, lines 30-40]. Examiner states that since the PCI MG is a type of connector it qualifies as a connector under Lin. It would be obvious to one of ordinary skill in the networking art at the time of the invention to have a connector as taught by Lin with the backplane / router computer suggested by Lin and the Cisco 3600 Guide to allow communication between the single board computer and the backplane.

Pertaining to claim 24, Lin and the Cisco 3600 Guide disclose a backplane used in a router. Lin fails to disclose the use of an E²PROM.

The Cisco 3600 Series Hardware Installation Guide does not explicitly disclose that a router can have an Electrically Erasable PROM (EEPROM or E²PROM). However, it does disclose that a router can have an EPROM-based memory.

Motivation exists to have an EEPROM instead of an EPROM because an EEPROM can be reprogrammed by just using a computer whereas an EPROM has to be erased by UV radiation.

It would have been obvious to one of ordinary skill in the networking art at the time of the invention to use an EEPROM with a backplane board in a router.

Pertaining to claim 27, Lin and the Cisco 3600 Guide teaches a backplane board for use in a router. Lin fails to disclose the use of LEDs on the backplane. However, the Cisco 3600 Series Hardware Installation Guide discloses that such a router contains LEDs [Troubleshooting, Appendix A, Table A-4]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to incorporate LEDs as described by the Cisco 3600 Guide into the backplane described by Lin to display the status of the backplane.

Pertaining to claim 28, Lin and the Cisco 3600 Series Hardware Installation Guide disclose a backplane for use in a router with LEDs. The Cisco 3600 Guide further discloses LEDs that blink to indicate the diagnosis of the operational state of the backplane [Troubleshooting, Appendix A, Table A-1]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to use LEDs to display the operational status of the backplane as described by the Cisco 3600 Guide with the backplane described by Lin.

Pertaining to claim 29, Lin and the Cisco 3600 Guide disclose a backplane for use in a router with LEDs that display the operational state of the backplane. The Cisco 3600 Guide further discloses LEDs that blink to indicate network activity and data activity [Troubleshooting, Appendix A, Table A-4] [The office interprets this as indicating network utilization rate and displaying high availability heartbeats] It would have been obvious to one of ordinary skill in the networking art at the time of the invention to use

LEDs to display network activity as described by the Cisco 3600 Guide on the backplane described by Lin.

Pertaining to claim 30, Lin and the Cisco 3600 Guide teach a backplane used in a router. Lin fails to disclose data communications ports horizontally aligned and numbered. Figure 1-5 of the Cisco Guide shows the placement of four Ethernet ports [Eth 0, Eth 1, Eth 2, Eth 3] in a horizontal axis on the router. The diagram is shown from the back of the router, with right on the diagram [of the back] being equivalent to left on the front of the router. Therefore Eth 0 is the first and left-most port of the router when looked at from the front of the device and Eth 3 is the last and right-most port when looked at from the front of the device. It would be obvious to one of ordinary skill in the networking art at the time of the invention to combine the port placement and numbering taught by the Cisco 3600 Guide with the backplane / router combination taught by Lin and the Cisco 3600 Guide for easy accessibility by the user to the ports.

Pertaining to claim 31, Lin and the Cisco 3600 Guide teach a router with a backplane and a single board computer. Lin fails to disclose an operating system for the computer. The Cisco 3600 Guide teaches a router can have an operating system [page 1-7, Flash memory stores the operating system software image]. It would be obvious to someone of ordinary skill in the networking art at the time of the invention to have an operating system as suggested by the Cisco 3600 Guide for the single board computer taught by Lin in order to operate the computer.

Pertaining to claim 32, Lin and the Cisco 3600 Guide teach a router with a backplane, a single board computer, and an operating system. Lin fails to teach means

for configuration of the operating system. The Cisco 3600 Guide teaches a means for configuring said operating system [page 1-7, NVRAM stores the system configuration file]. It would be obvious to someone of ordinary skill in the networking art at the time of the invention to have means for configuring an operating system as taught by the Cisco 3600 Guide on the router / backplane combination as taught by Lin and the Cisco 3600 Guide to allow for system changes enacted by the user.

Pertaining to claim 33, Lin and the Cisco 3600 Guide teach a router with a backplane, a single board computer, and an operating system. Lin fails to teach the operating system can be configured directly or remotely. The Cisco 3600 Guide teaches the router can have the operating system configured by direct configuration [Appendix C, Virtual Configuration Register, Changing Configuration Register Settings] or by remote configuration [Appendix B, ROM Monitor, Copying the Cisco IOS Image]. It would be obvious to someone of ordinary skill in the networking art at the time of the invention to allow direct or remote configuration of the operating system as taught in the Cisco 3600 Guide on the router / backplane combination suggested by Lin and the Cisco 3600 Guide to allow for flexibility in placement of the router in proximity to the configuring user.

Pertaining to claim 34, Lin and the Cisco 3600 Guide teach a router / backplane combination with a configurable operating system. Lin fails to disclose means of configuring the operating system selected from a computer keyboard and interface, computer monitors and interface, serial data communications ports, parallel data communications ports, computer terminals, and combinations thereof. The Cisco 3600

Guide teaches the router can be connected to by an external interface such as a serial port [Figure 1-5]. It would be obvious to someone of ordinary skill in the networking art at the time of the invention to connect via a serial port as taught by the Cisco 3600 Guide on the router / backplane combination suggested by Lin and the Cisco 3600 Guide to allow for external input by a user.

Pertaining to claim 35, Lin and the Cisco 3600 Guide teach a router / backplane combination with a configurable operating system. Lin fails to disclose redundant power supplies. The Cisco 3600 Guide teaches the router can have dual redundant, hot-swappable power supplies [page 1-6]. It would be obvious to someone of ordinary skill in the networking art at the time of the invention to have redundant power supplies as taught by the Cisco 3600 Guide on the router / backplane combination suggested by Lin and the Cisco 3600 Guide in order to maintain network connectivity in case one power supply fails.

Pertaining to claim 38, Lin and the Cisco 3600 Guide teach a router / backplane combination. Lin fails to disclose the presence of a plurality of cooling fans in the housing. The Cisco 3600 Guide teaches the router may contain more than one fan [Figure 1-5]. It would be obvious to someone of ordinary skill in the networking art at the time of the invention to have multiple fans as taught by the Cisco 3600 Guide on the router / backplane combination suggested by Lin and the Cisco 3600 Guide in order to keep the router from overheating if one fan fails.

Claims 3-4 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin and the Cisco 3600 Guide as applied to claims 2 and 24 above, and further in view of How PCI Works (How Stuff Works, by Jeff Tyson).

Lin and the Cisco 3600 Guide teach a backplane for use in a router that includes an EEPROM. Lin and the Cisco 3600 fail to disclose transmitting an identifying item before startup.

How PCI Works teaches that a device [EEPROM memory chip] on a PCI bus transmits a device ID [identifying item] before startup. The device ID is sent to the computer over the PCI bus, and therefore must be sent as data. So the device ID is considered a data key.

Motivation exists for a PCI device to transmit a device ID before startup to allow for automatic recognition of the device [How PCI Works].

It is obvious to one of ordinary skill in the art to use a PCI device [such as a single board computer] to transmit an ID before commencement of operation.

Claim 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin as applied to claim 1 above, and further in view of Cabaniss et al. (U.S. Patent No. 5,790,394).

Pertaining to claim 14, Lin teaches a backplane for use in a router. Lin fails to disclose the presence of a half-wave bridge rectifier. However, Cabaniss teaches the use of a power supply with a bridge rectifier [Figure 2, item 217]. Cabaniss does not explicitly disclose a half-wave bridge rectifier, but a half-wave bridge rectifier is a type of bridge rectifier and therefore is obvious. Motivation exists to combine Cabaniss with Lin in order to supply power to the network backplane. It is obvious to one of ordinary skill in the art to use a half-wave bridge rectifier with a backplane and a power supply.

Pertaining to claim 15, Lin and Cabaniss teach a backplane for use in a router with a bridge rectifier present. Lin fails to disclose a redundant power supply. However, Cabaniss further discloses a power supply unit [Figure 2] with multiple power supplies connected for redundancy [Figure 2, item 207]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to combine a redundant power supply as taught by Cabaniss with the backplane for use in a router taught by Lin in order to maintain network connectivity in case one power supply fails.

Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin and Cisco 3600 Series Hardware Installation Guide as applied to claim 17 above, and further in view of How Computers Work (Ron White, Seventh Edition, pp 16-17).

Pertaining to claim 18, Lin and Cisco 3600 Series Hardware Installation Guide teach a router with a backplane and expansion slots for network modules as applied to claim 17. The aforementioned references fail to teach that all slots need not be populated. However, How Computers Work clearly shows a motherboard [router with

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backplane] that has expansion slots that are not all populated. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to have expansion slots that were not filled as shown in How Computers Work on the backplane / router combination suggested by Lin and the Cisco 3600 Guide in order to allow for future expansion.

Pertaining to claim 19, Lin and Cisco 3600 Series Hardware Installation Guide teach a router with a backplane and expansion slots for network modules as applied to claim 17. The aforementioned references fail to teach that there are at least three expansion slots present on the router. However, How Computers Work shows three expansion slots. How Computers Work does not show a machine that is limited to one, two, and three expansion slots, but does show the presence of five expansion slots. If five expansion slots can be present, then it is obvious that the machine can be further limited by only installing three or fewer expansion slots. It would be obvious to one of ordinary skill in the networking art at the time of the invention to allow three expansion slots as shown in How Computers Work to be present in the router / backplane combination suggested by Lin and the Cisco 3600 Guide to allow for further expansion of the router.

Pertaining to claim 20, Lin, the Cisco 3600 Guide, and How Computers Work teach a router with a backplane and three expansion slots for network interface cards as applied to claim 19. Lin and the Cisco 3600 Guide fail to disclose that one, two, or three of the slots are populated with a network interface card. How Computers Work shows expansion slots on a board with two slots populated and the remainder empty.

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Examiner takes the position that if two slots are shown to be populated in the example

by How Computers Work, it is additionally taught that one or three slots can be

populated because if the slots are present then a card can be placed in the slot. It

would have been obvious to one of ordinary skill in the networking art at the time of the

invention to have one, two, or three of the network interface slots populated as shown in

How Computers Work in the router taught by the Cisco 3600 Guide on the backplane

taught by Lin, to allow for future expansion of the router / backplane combination.

Pertaining to claim 21, Lin, the Cisco 3600 Guide, and How Computers Work

disclose a router with a backplane that has data communications ports. Lin and How

Computers Work fail to disclose use of 10/100 megabit ports, one gigabyte ports, and

combinations thereof. The Cisco 3600 Guide teaches a router that has 10/100 Fast

Ethernet interfaces [page 1-6, 10/100 Fast Ethernet interface is synonymous with a

10/100 megabit port]. It would be obvious to one of ordinary skill in the networking art at

the time of the invention to use 10/100 megabit ports as taught by the Cisco 3600 Guide

with the router / backplane combination taught by Lin, the Cisco 3600 Guide, and How

Computers Work, in order to allow for full bandwidth connections to many network

interface cards present in the market at the time of the invention.

Pertaining to claim 22, Lin, the Cisco 3600 Guide, and How Computers Work

teach a router / backplane combination with 10/100 megabit data communication ports.

The Cisco Guide does not explicitly teach the use of four 10/100 megabit ports,

however the Cisco Guide does teach two on board 10/100 megabit ports [Fast Ethernet

interfaces, page 1-6] and six slots for network modules. This is interpreted as the ability

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to expand to two or more 10/100 megabit ports by use of network expansion cards [network modules]. Figure 1-5 of the Cisco Guide also shows the placement of four Ethernet [data communications] ports [Eth 0, Eth 1, Eth 2, Eth 3]. Since the ports are shown as Ethernet ports, and the Cisco Guide also teaches 10/100 megabit [Fast Ethernet] ports, Examiner states that the Ethernet ports must be 10/100 megabit ports. It would be obvious to one of ordinary skill in the networking art at the time of the invention to place four 10/100 megabit data communications ports as shown by the Cisco 3600 Guide on the router / backplane combination suggested by How Computers Work, the Cisco 3600 Guide, and Lin, to allow for network connectivity.

Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin and the Cisco 3600 Guide as applied to claim 35 above, and further in view of Cabaniss et al. (U.S. Patent No. 5,790,394).

Pertaining to claim 36, Lin and the Cisco 3600 Guide teach a router / backplane combination with a redundant power supply. Lin and the Cisco Guide fail to disclose the presence of a half-wave bridge rectifier. However, Cabaniss teaches the use of a power supply with a bridge rectifier [Figure 2, item 217]. Cabaniss does not explicitly disclose a half-wave bridge rectifier, but a half-wave bridge rectifier is a type of bridge rectifier and therefore is obvious. Motivation exists to combine Cabaniss with Lin and the Cisco Guide in order to supply power to the network backplane. It is obvious to one of ordinary skill in the art to use a half-wave bridge rectifier with a backplane and a power supply.

Pertaining to claim 37, Lin and the Cisco 3600 Guide and Cabaniss teach a backplane for use in a router with a bridge rectifier present. Lin and the Cisco guide fail to disclose a redundant power supply. However, Cabaniss further discloses a power supply unit [Figure 2] with multiple power supplies connected for redundancy [Figure 2, item 207]. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to combine a redundant power supply as taught by Cabaniss with the backplane for use in a router taught by Lin and the Cisco Guide in order to maintain network connectivity in case one power supply fails.

Pertaining to claim 40, Lin and the Cisco 3600 Guide teach a backplane for use in a router. The Cisco 3600 Guide fails to teach use of a peripheral computer interface bus. Lin teaches the backplane can use a PCI connection [column 7, line 20] to receive a single board computer [Figure 4, item 17] with a PCI connector [column 7, line 16]. An early embodiment of the PCI bus is 32-bits and 33 megahertz, so the use of such a type of PCI bus is obvious. It would have been obvious to one of ordinary skill in the networking art at the time of the invention to use a PCI bus as taught in Lin on the backplane / router combination taught by Lin and the Cisco 3600 Guide to allow for faster communication on the backplane.

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin and Cisco 3600 Series Hardware Installation Guide as applied to claim 38 above, and further in view of Javadi (U.S. Patent No. 6,445,280).

The Cisco Guide and Lin teach a router and a backplane combination with two fans present. The Cisco Guide and Lin fail to disclose use of a polyfuse or power takeoffs for the cooling fans.

Javadi teaches use of a polyfuse [repetitive fuse, column 2, lines 51-60] to prevent damage to a circuit because of temperature increase. Javadi does not teach this being used in a power feed from a router to a cooling fan, and it is inherent that a cooling fan for a router should get its power from the router.

Motivation exists to use a polyfuse in a fan cooling circuit to prevent damage to a circuit from temperature change [column 2, lines 55-60].

It is obvious to one of ordinary skill in the art to use a polyfuse to protect a cooling fan circuit.

Claim 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin and Cisco 3600 Series Hardware Installation Guide as applied to claim 23 above, and further in view of Cisco 800 Series ISDN Router Data Sheet (published 2000).

Lin and the Cisco 3600 Guide fail to teach security measures on the backplane such as a firewall and denial of service protection.

The 800 Series Data sheet teaches a router that uses a dynamic firewall [adaptive firewall protection, page 3] and denial of service attack detection and prevention [denial of service protection, page 4].

Motivation exists to combine a router with a firewall and denial of service protection in order to increase network security.

It is obvious to one of ordinary skill in the art to add security measures to the router.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. Swearingen whose telephone number will be 571-272-3921 after October 19, 2004. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on 703-308-5221 (571-272-3923 after October 19, 2004). The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Jeffrey R. Swearingen
Examiner
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JRS


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